

Environmental Protection Agency

§ 1065.301

AIR-TO-FUEL RATIO MEASUREMENTS

§ 1065.284 Zirconia (ZrO₂) analyzer.

(a) *Application.* You may use a zirconia (ZrO₂) analyzer to measure air-to-fuel ratio in raw exhaust for continuous sampling. You may use O₂ measurements with intake air or fuel flow measurements to calculate exhaust flow rate according to §1065.650.

(b) *Component requirements.* We recommend that you use a ZrO₂ analyzer that meets the specifications in Table 1 of §1065.205. Note that your ZrO₂-based system must meet the linearity verification in §1065.307. You may use a Zirconia analyzer that has compensation algorithms that are functions of other gaseous measurements and the engine's known or assumed fuel properties. The target value for any compensation algorithm is 0% (that is, no bias high and no bias low), regardless of the uncompensated signal's bias.

[70 FR 40516, July 13, 2005, as amended at 76 FR 57443, Sept. 15, 2011]

PM MEASUREMENTS

§ 1065.290 PM gravimetric balance.

(a) *Application.* Use a balance to weigh net PM on a sample medium for laboratory testing.

(b) *Component requirements.* We recommend that you use a balance that meets the specifications in Table 1 of §1065.205. Note that your balance-based system must meet the linearity verification in §1065.307. If the balance uses internal calibration weights for routine spanning and the weights do not meet the specifications in §1065.790, the weights must be verified independently with external calibration weights meeting the requirements of §1065.790. While you may also use an inertial balance to measure PM, as described in §1065.295, use a reference procedure based on a gravimetric balance for comparison with any proposed alternate measurement procedure under §1065.10.

(c) *Pan design.* We recommend that you use a balance pan designed to minimize corner loading of the balance, as follows:

(1) Use a pan that centers the PM sample media (such as a filter) on the weighing pan. For example, use a pan

in the shape of a cross that has up-swept tips that center the PM sample media on the pan.

(2) Use a pan that positions the PM sample as low as possible.

(d) *Balance configuration.* Configure the balance for optimum settling time and stability at your location.

[73 FR 37300, June 30, 2008, as amended at 75 FR 68462, Nov. 8, 2010]

§ 1065.295 PM inertial balance for field-testing analysis.

(a) *Application.* You may use an inertial balance to quantify net PM on a sample medium for field testing.

(b) *Component requirements.* We recommend that you use a balance that meets the specifications in Table 1 of §1065.205. Note that your balance-based system must meet the linearity verification in §1065.307. If the balance uses an internal calibration process for routine spanning and linearity verifications, the process must be NIST-traceable. You may use an inertial PM balance that has compensation algorithms that are functions of other gaseous measurements and the engine's known or assumed fuel properties. The target value for any compensation algorithm is 0% (that is, no bias high and no bias low), regardless of the uncompensated signal's bias.

(c) *Loss correction.* You may use PM loss corrections to account for PM loss in the inertial balance, including the sample handling system.

(d) *Deposition.* You may use electrostatic deposition to collect PM as long as its collection efficiency is at least 95%.

[73 FR 59259, Oct. 8, 2008, as amended at 75 FR 68462, Nov. 8, 2010; 76 FR 57443, Sept. 15, 2011]

Subpart D—Calibrations and Verifications

§ 1065.301 Overview and general provisions.

(a) This subpart describes required and recommended calibrations and verifications of measurement systems. See subpart C of this part for specifications that apply to individual instruments.

(b) You must generally use complete measurement systems when performing